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Bescheinigung

Certificate

Attestation

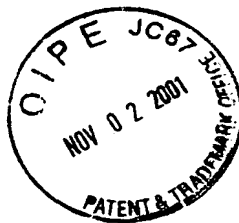
Die angehefteten Unterlagen stimmen mit der ursprünglich eingereichten Fassung der auf dem nächsten Blatt bezeichneten europäischen Patentanmeldung überein.

The attached documents are exact copies of the European patent application described on the following page, as originally filed.

Les documents fixés à cette attestation sont conformes à la version initialement déposée de la demande de brevet européen spécifiée à la page suivante.

Patentanmeldung Nr. Patent application No. Demande de brevet n°

00650206.6



Der Präsident des Europäischen Patentamts;
Im Auftrag

For the President of the European Patent Office

Le Président de l'Office européen des brevets
p.o.

I.L.C. HATTEN-HECKMAN

DEN HAAG, DEN
THE HAGUE, 26/07/01
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**Blatt 2 der Bescheinigung
Sheet 2 of the certificate
Page 2 de l'attestation**

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Applicant(s):
Demandeur(s):
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"Information Communication"Introduction

- 5 The invention relates to communication of information between servers and user devices in a wide area network.

In recent years there has been rapid development in network server technology, in the range of content hosted by servers, and in the diversity of user devices. On the
10 server side, HTML, voice, and TV video/audio are examples of the content now hosted by many network operators. On the user side, mobile phones have voice, SMS and/or WAP interfaces and user devices also include a variety of types of portable and desktop computers.

- 15 Thus a major problem facing network operators is that of providing mechanisms to allow the servers to communicate effectively with the user devices.

The invention addresses this problem.

20 Statements of Invention

According to the invention, there is provided a communication processing method carried out by a network operator platform for facilitating communication between servers and user devices, the method comprising the steps of:

25

identifying a group structure in either well formed HTML or XHTML content of received information from a server,

applying a task structure outline to the content, and

30

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transmitting information to a recipient user device according to parameters associated with the structure and the user device.

5 In one embodiment, the content is transformed to a device-specific format based on knowledge of the given device type, for example, device specific formats include HTML (for PCs, laptops, PDAs, and pocket PCs), WML (for smart phones, PDAs and Palms), cHTML. (for i-mode), HDML and voiceXML.

10 In another embodiment, the group structure comprises a group associated with each of a plurality of content sections.

In a further embodiment, at least some groups comprise sub-groups in a hierarchy arrangement.

15 In one embodiment, the platform applies to received content a structure outline associated with a user device type, said structure outline comprising attributes setting out how groups are to be transmitted to the user device and outputted by the user device.

20 In another embodiment, each group comprises a head and a body and the structure outline attributes allow different transmission or output conditions for the head and body of each group.

25 In a further embodiment, the platform operates according to instructions encoded in a task mark-up language compliant with XML.

30 In a still further embodiment, the platform processes received content either automatically or in response to manually-inputted instructions, in which automatic processing is allowed by application of a mark-up language mapping at an initialisation stage.

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In one embodiment, the platform processes received content according to personalisation attributes chosen by a user.

- 5 In another embodiment, the platform chooses a structure outline according to both a user device type and also user-chosen personalisation attributes.

In one embodiment, a plurality of menu structures are applied to different pages on a site.

10

In another embodiment, the menu structure is held in a separate document and *included* (server side include) in the document.

- 15 According to another aspect, the invention provides a network operator platform comprising means for performing a communication method as defined above.

Detailed Description of the Invention

- 20 The invention will be more clearly understood from the following description of some embodiments thereof given by way of example only with reference to the accompanying drawings in which:

Fig. 1 is a diagrammatic representation of the structure of a page communicated by a server and the manner in which it is processed;

25

Fig. 2 is a diagram illustrating content structure; and

Fig. 3 is a sample page illustrating groupings.

- 4 -

A network operator platform is programmed with a language called Task Mark-up Language (TML), and it interfaces with content provider servers and with user devices of subscribers so that they can effectively communicate with each other.

- 5 TML (Task Markup Language) is a generic non-device specific language used to describe the content inherent in a number of formats including HTML, plain text, and heterogeneous business objects.

10 TML is a superset of XHTML. TML adds the following tags to XHTML to markup the structure of XHTML documents. The addition of these tags enables a non-device specific description of content:

- mm-head
- mm-body
- mm-group
- 15 • mm-structure
- mm-group-ref
- mm-exclude
- mm-include
- mm-table-model
- 20 • mm-logo
- mm-content

25 TML allows content pages to be easily divided into parts, which can then be extracted as necessary to any device. A page that has been marked up in TML can be ported to any device in the appropriate format.

TML imposes structure on content encapsulating the details necessary to select and arrange content, allowing the structure to be easily extracted and presented to Users independently of the end-User device. It is a powerful generic language (non-device

- 5 -

specific) that produces a richly structured, loss-less representation of the original content. To summarise, TML:

- extends XHTML.
- 5 • provides a generic/non-device specific markup language.
- imposes non-device specific structure on content.
- aids easy transformation of content.

Structured TML Groups

10

TML, at a high level, will mark up logical sections of a page into groups. Each group will have a head and a body. Within the body further sub-groups can exist. In this way a hierarchical tree structure can be imposed on a page.

15 Presentation of TML Groups

How the TML groupings within the page are presented to the user is determined by how the content transformation mechanism interprets the TML. The transformation mechanism is determined by user agent capabilities and user profiles.

20

This interpretation is controlled by a set of high-level presentation instructions contained within a *TML Outline Structure*. The *Outline Structure* describes (a) what groups are to be displayed and (b) how the groups are to be displayed, when the user accesses that particular page. For instance, the *Outline Structure* could state that only
25 the headings to certain specified groups be displayed as links, or alternatively all the groups could be displayed in their entirety - both heads and bodies.

As well as this, the *Outline Structure* can determine how much of the tree hierarchy is visible to the User when they access that page. For instance the Author may wish to

- 6 -

make visible only the top-level groups, or alternatively, all groups down to a certain level.

An *Outline Structure* can be applied to many documents or even a whole site.

- 5 Therefore, the presentation structure of a whole site can be changed by simply altering the *Outline Structure*. This is enabled by having the TML documents reference one document holding the *Outline Structure*.

- 10 In addition, the *Outline Structure* can be applied to a specific channel or device, allowing authors to make changes in structure presentation for one channel or one specific device, without altering presentations for other channels and devices.

- 15 A number of *Outline Structures* can exist within a given page corresponding to each device class that is to be catered for. This allows for different, more appropriate views of the same page depending on the device class.

Example

Given the Web page of Fig. 1, then it is possible to display:

20

- the headings of the two top-level groups, where these headings link to the full group
- the headings of all the groups and subgroups down to a specified level in a Table of Contents style
- 25 • the full text of the two top-level groups (along with links to their subgroups if any)
- the full text of all groups and subgroups down to a specified level
- the full page as given (in this case the same as above)

Inclusion/Exclusions

30

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The facility for including and excluding certain elements for specific devices is also catered for. *Includes* allow the user to wrap content that needs to be included for output for a particular user agent or device. By default everything within a group is displayed, however with the include functionality, the User can write device specific content if necessary. Conversely *Excludes* allow the User to wrap content that needs to be excluded from output for a particular user agent or device.

Both the *Outline Structure* and the *Include* and *Exclude* functionality allow different, more appropriate views of pages particular to device class. This can be used for personalisation allowing users to see different versions of the same page based on their user profile.

Site Navigation

Although the tree hierarchy given by groups and the Outline Structure provide the appropriate navigation for a particular page, site wide navigation must also be dealt with. Site wide navigation allows pages in a site to have a common navigation structure based on a tree hierarchy of the overall site. Take for instance a site with a structure as illustrated in Fig. 2.

20

All the pages at any level of the site's tree hierarchy must have access to the appropriate ancestor pages. Therefore, any of the business articles will have the necessary navigation links to both the Business Home and the Site Home.

25 XML Language Support

TML supports the embedding of other XML compliant languages within it. Therefore a TML document could contain an RSS feed. Translation of the embedded XML language will occur within Everix providing a translation mechanism for that language to the required output format exists.

30

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Other TML Functionality

5 Tables are treated differently. A table can be displayed specified as either row or column major. It can then be processed by any device. However it may be more appropriate, depending on the type or quantity of information, to process these tables as a collection of groups, so that each row, or column, is treated as a group.

TML also provides the ability to specify logos.

10

Applying TML

15 Application of the structural and presentational aspects of TML to the original content can be performed by a number of manual, semi-and fully-automated mechanisms. Where a good structure already exists within the original content, a mapping to TML can be applied automatically at the authoring stage or dynamically at a later stage through either internal or external translation mechanisms.

Transformation of TML

20

The transformation of TML to device specific formats is achieved by selecting an appropriate translation mechanism based on mobility session object attributes such as device characteristics and user profile.

25 The transformation may produce a composite response comprised of more than one sub-response (or page). Elements of this composite response will be made available to the client on demand (starting by default with the first element). This form of response is used where the original response from the Service is inappropriately large for the client's browsing device. The Content Assembly Engine may add additional

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inter-page links to enable the client to navigate through the set of pages derived from the original response.

Initial Markup

5

The markup on every TML page must begin with:

```
<?xml version="1.0"?>
```

```
<!DOCTYPE html SYSTEM "ma_tml.dtd">
```

10

In this way the authoring tool can validate the syntax of the document and the Everix system can identify that the document is a TML document. Replace any existing DOCTYPE references with the one specified above.

15 **Groups**

A HTML page can be broken down into logical groups

A group consists of both

- a head, and
- 20 • a body

The body of a group can contain groups (subgroups).

25 A body is linked to its corresponding head via the body's idref, which refers to the id of the head.

30 Due to the somewhat haphazard nature of HTML, a group's body may be spread all over a page, in separate cells of a table for instance. In this case, multiple bodies linked by an idref may exist - conceptually, these linked multiple bodies represent one body.

- 10 -

If no head naturally exists within the group then one should be inserted by the author.

5 Syntax

```
<mm-group id="1" title="Articles">  
<mm-head id="101" useradded="no">  
<mm-body id="102" idref="101">
```

10

Figure 1 mm-structure

where the attributes are specified as follows:

Id	unique identifier
idref	a reference or pointer to a unique identifier, id, which must exist on the page. This allows the mm-body tag to be associated with a corresponding mm-head tag
title	an arbitrary title used by the author to identify a group. It can be used instead of the text within the group's head for creating menus for small devices such as WAP, since the text within the group's head could potentially be quite long.
useradded	Can be set to "yes" or "no". Describes whether or not the text of the mm-head tag already existed and is part of the original page, or if it was added in by the author in order to give a context to the mm-body.

15 Example

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Let us examine the *Who are we?* page, which is illustrated in Fig. 3.

Logically there exists one overall group (*Who are we?*). Within the *Who are we?* group we can see that there are other groups; *The People* and *Investors*. These groups are sub-groups of *Who are we?*. Within these groups there are more subgroups. For instance the *The People* group contains the subgroups *Brian Collins*, *Eamonn Howe*, *Brian Kinane*

In summary there is one overall group, containing two subgroups, each of which contain three further nested subgroups.

The following shows how this page would be marked up in TML.

```

15  <html>
    <head><title>MobileAware Homepage 2 of 2</title></head>
    <mm-structure id="MobileAware" useragents="wml1.1">
    <mm-group-ref idref="MA_Who" type="normal" depth="0" display="all" />
    </mm-structure>
    <body bgcolor="white">
    <mm-group id="MA_Who" title="Who we are">
    <table border="0">
    <tr>
    <td width="80%">
    <font color="white"> <mm-head id="MA_Who-Head">Who are we?</mm-head></font>
    </td>
    </tr>
    <mm-body id="MA_Who-Body" idref="MA_Who-Head">
    <tr>
    <td>
    MobileAware is a global company headquartered in The National Digital Park, Dublin, Ireland. These offices house our software
    excellence center, marketing division and European sales force. The North American market is supported through the company's office
    in Atlanta GA. It is the company's intention to open a development office in Sweden within the next year.
    </td>
    </tr>
    <mm-group id="People" title="The People">
    <tr>
    <td>
    <font color="white"> <mm-head id="MA_People-Head">The people</mm-head> </font>
    </td>
    </tr>
    <mm-body id="MA_People-Body" idref="MA_People-Head">
    <tr>
    <td>
    MobileAware has all the resources necessary to provide our customers with an integrated suite of managed components. <br>
    At the center of MobileAware's resources is an outstanding set of development, engineering and marketing teams. The company's board
    of directors has a vast range of previous business experience in many different sectors. <br>
    <mm-group id="Person1" title="Brian Collins">
    <mm-head id="P1-Head"><b>Brian Collins</b></mm-head><br>
    <mm-body id="P1-Body" idref="P1-Head">
    Brian has extensive commercial and technical experience in the telecommunications sector worldwide having worked with Pacific Bell,
    Oracle and TeleNor. <br>
    </mm-body>
    </mm-group>
    <mm-group id="Person2" title="Eamonn Howe">
    <mm-head id="P2-Head"><b>Eamonn Howe</b></mm-head><br>
    <mm-body id="P2-Body" idref="P2-Head">
    Eamonn has over 10 years experience in the telecommunications industry with AT&T, Broadcom Eireann Research, Ericsson and
    EDB 4TEL.
    </mm-body>
    </mm-group>
    </td>
    </tr>
    </mm-body>
    </tr>
    </table>
    </mm-group>
  
```

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```

5      </mm-group>
      <mm-group id="Person3" title="Brian Kinane">
      <mm-head id="P3-Head"><b>Brian Kinane</b> - Head of Product Management </mm-head><br>
      <mm-body id="P3-Body" idref="P3-Head">
      Over the last decade, Brian Kinane has focused his career on the application of advanced information technology to the enhancement of
      telecommunication & internet services
      </mm-body>
      </mm-group>
10     </td>
      </tr>
      </mm-body>
      </mm-group>
15     <mm-group id="Investors" title="The Investors">
      <tr>
      <td>
      <font color="white"><mm-head id="MA_Investors-Head">Investors</mm-head></font>
      </td>
      </tr>
      <mm-body id="MA_Investors-Body" idref="MA_Investors-Head">
      <tr>
      <td>
      <mm-group id="Investor1" title="Cross Atlantic">
      <mm-head id="Inv1-Head"><b>Cross Atlantic Capital Partners </b></mm-head><br>
      <mm-body id="Inv1-Body" idref="Inv1-Head">
      Cross Atlantic Capital Partners is a venture capital management firm that manages several venture partnerships, the first of which is
      Cross Atlantic Technology Fund L P
      </mm-body>
      </mm-group>
      <mm-group id="Investor2" title="Intel Capital">
      <mm-head id="Inv2-Head"><b>Intel Capital </b></mm-head><br>
      <mm-body id="Inv2-Body" idref="Inv2-Head">
      The strategic investment program of Intel Corp (Nasdaq INTL), Intel Capital adds a blend of strategic focus with financial discipline
      <br>
      </mm-body>
      </mm-group>
      <mm-group id="Investor3" title="Island Capital">
      <mm-head id="Inv3-Head"><b>Island Capital</b></mm-head><br>
      <mm-body id="Inv3-Body" idref="Inv3-Head">
      Island Capital is an investment management company which sources, and manages Dennis O'Brien's private equity investments
      </mm-body>
      </mm-group>
      </td>
      </tr>
      </mm-body>
      </mm-body>
      </mm-group>
      </table>
      </mm-group>
      </body>
      </html>

```

55 Extracting Menus from Groups

On clicking a link, the user will typically be taken to a page that represents a group, i.e. a page that contains a head followed by a body. If the body contains further subgroups then a menu (collection of links) to these subgroups is presented at the bottom of the screen. Take the Mobileaware page illustrated in **Error! Reference source not found.** Assuming that the section *Who are we?* is one such logical grouping with subgroups *The People* and *The Investors*, then we should obtain the following screen, where the subgroup headings link to those particular groups:

65

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Who are we?

MobileAware is a global company headquartered in The National Digital Park, Dublin, Ireland. These offices house our software excellence center, marketing division and European sales force. The North American market is supported through the company's office in Atlanta GA. It is the company's intention to open a development office in Sweden within the next year.

The people

Investors

The format here is

- Heading,
- Body,
- Collection of links to the group's subgroups - in this case *The People* and *Investors*.

Clicking on one of these links brings up a similarly formatted page. For example clicking on *The People* would result in the following page:

The People

MobileAware has all the resources necessary to provide our customers with an integrated suite of managed components.

At the center of MobileAware's resources is an outstanding set of development, engineering

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and marketing teams. The company's board of directors has a vast range of previous business experience in many different sectors.

Brian Collins C.E.O.

Eamonn Howe-Head of Development

Brian Kinane - Head of Product Management

Again the format here is

- Heading,
- Body,
- Collection of links to the group's subgroups - in this case Brian Collins, Eamonn Howe, and Brian Kinane.

Clicking on one of these links brings up a similar page except that with those groups there are no further subgroups and hence no collection of links. For example clicking on Brian Collins would result in the following

Brian Collins C.E.O.

Brian has extensive commercial and technical experience in the telecommunications sector worldwide having worked with Pacific Bell, Oracle and TeleNor.

Structure Outline

mm-structure

- 15 -

A HTML page can be broken down into a number of logical groups. At this top level, we impose a structure on these groups that dictates how the User sees the page when they visit it. This is called the mm-structure. The menu structure allows for:

- A table of contents view of the page.
- 5 • A full unchanged view of the page
- A list of links within a page

Syntax

```
10      <mm-structure id="5" useragents="wml1.1">
        <mm-group-ref idref="1" type="normal" depth="1" display="headings">
```

where the attributes are specified as follows:

Id	unique identifier
Idref	a reference or pointer to a unique identifier, id, which must exist on the page. This allows the mm-groupref refer to a corresponding mm-head tag
Type	Can be "normal" or "options". Specifies whether the menu appears on the screen when the user visits the page or whether it appears behind the Options button
Depth	Specifies the level of recursion to use when building a table of contents
useragents	Specifies what devices the menu structure is associated with. Different devices can therefore have different views of the page. Useragent examples include wml1.1 and html4.0.
display	Can have three values – <i>headings</i> , <i>all</i> , <i>links</i> . <i>Headings</i>

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displays the headings within a group down to the level specified, *All* displays everything within the group – headings, bodies etc. *Links* displays headings and any links that occur within the group.

The mm-structure allows the user to include references to any group at any level on the page. Including a group reference with a certain depth level dictates what group headings are to be included as links.

5

Depth	Display	Result
Flat	all	Displays the whole page as a flat structure.
0	headings	Displays a link to that group.
1	headings	Displays a collection of links to the group and its subgroups.
2	headings	Displays a collection of links to the group, its subgroups and its subgroup's subgroups.
0	all	Displays that group, both heading and body and a collection of links to its subgroups if any.
1	all	Displays that group, both heading and body, its subgroups, both heading, body and a collection of links to their subgroups if any.
0	links	Displays the heading of the group and

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any links that occur in the body of that
group

The mm-structure allows for a certain degree of personalization, in that a number of different structures could be associated with a page. In essence you can provide different views and access to some or all of the page depending on certain user agent
5 properties (both device specific and Everix specific) This can also be used in conjunction with the include and exclude tags.

Example

10 For example take the Mobileaware page illustrated in **Error! Reference source not found.** Assuming it consists of one group **Who we are?** with an id of 231, which has two subgroups **The People** and **Investors**, then we can build the following page structure:

15 <mm-structure id="5" useragents="wml1.1">
 <mm-group-ref idref="231" type="normal" depth="0" display="all" />
 </mm-structure>

This would yield the following:

20

Who are we?

25

MobileAware is a global company
headquartered in The National Digital Park,
Dublin, Ireland. These offices house our
software excellence center, marketing division
and European sales force. The North American
market is supported through the company's

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office in Atlanta GA. It is the company's intention to open a development office in Sweden within the next year.

The people**Investors**

5

If we had the following menu structure:

```
10      <mm-structure id="5" useragents="wml1.1">
      <mm-group-ref idref="231" type="normal" depth="0" display="headings" />
      </mm-structure>
```

Then we would get the following simple link:

15

Who are we?

If we had the following menu structure:

```
20      <mm-structure id="5" useragents="wml1.1">
      <mm-group-ref idref="231" type="normal" depth="1" display="headings" />
      </mm-structure>
```

Then we would get the following links:

25

Who are we?

- The people

- Investors

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If we had the following menu structure:

```
5      <mm-structure id="5" useragents="wml1.1">
      <mm-group-ref idref="231" type="normal" depth="2" display="headings" />
      </mm-structure>
```

Then we would get the following links:

10

Who are we?

- The people
 - - Brian Collins
 - - Eamonn Howe
 - - Brian Kinane
- Investors
 - - Cross Atlantic Capital Partners
 - - Intel Capital
 - - Island Capital

15

20 If we had the following menu structure:

```
<mm-structure id="5" useragents="wml1.1">
<mm-group-ref idref="231" type="normal" depth="flat" display="all" />
</mm-structure>
```

25

- 20 -

Then we would get the following:

Who are we?

MobileAware is a global company headquartered in The National Digital Park, Dublin, Ireland. These offices house our software excellence center, marketing division and European sales force. The North American market is supported through the company's office in Atlanta GA. It is the company's intention to open a development office in Sweden within the next year.

The People

MobileAware has all the resources necessary to provide our customers with an integrated suite of managed components.

At the center of MobileAware's resources is an outstanding set of development, engineering and marketing teams. The company's board of directors has a vast range of previous business experience in many different sectors.

Brian Collins C.E.O.

Brian has extensive commercial and technical experience in the telecommunications sector worldwide having worked with Pacific Bell, Oracle and TeleNor.

Eamonn Howe-Head of Development

Eamonn has over 10 years experience in the telecommunications industry with AT&T, Broadcom Eireann Research, Ericsson and EDB 4TEL.

Brian Kinane - Head of Product Management

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Over the last decade, Brian Kinane has focused his career on the application of advanced information technology to the enhancement of telecommunication & internet services

5

Investors**Cross Atlantic Capital Partners (www.xacp.com)**

Cross Atlantic Capital Partners is a venture capital management firm that manages several venture partnerships, the first of which is Cross Atlantic Technology Fund L.P.

10

Intel Capital (www.intel.com/capital)

The strategic investment program of Intel Corp. (Nasdaq:INTL), Intel Capital adds a blend of strategic focus with financial discipline.

15

Island Capital

Island Capital is an investment management company which sources, and manages Dennis O' Brien's private equity investments.

Generalised menu structures

- 20 For sites that have a structured layout, it may be more convenient for the author to specify a small number of menu structures that can be applied to various different pages on the site. This menu structure would be held in a separate document and *included* (server side include) in the TML document. Examples of this would be that on a certain set of pages on a site, one may want a table of contents that includes all
- 25 groups at levels 1 and 2.

This would be used mainly for data driven solutions on dynamic sites. It allows for a quick and convenient way of including/excluding groups at certain depths within the

- 22 -

document. Within the construct a 'level' attribute is set which determines how deep down the document is processed.

If one had the following menu structure:

5

```
<mm-structure id="struc1" useragents="wml1.1">
  <mm-level-groups-ref level="2" optionsref="gOptions" depth="1"
    display="headings" />
</mm-structure>
```

10

All the first and second level groups within the document would be processed.

level	This determines how deep down the document is processed.
optionsref	This contains the id of a particular group and is for defining which group is going to be the options menu.
depth	Same as for mm-group-ref
display	Same as for mm-group-ref

Navigation

15

At all times the *Back* button will be operational so that if a page exceeds the page size limit of a particular device (e.g. 1.4K in the case of the Nokia 7110) and needs to be split up into smaller pages then the User can go back and forth through these pages. However the XSLT transformation is not responsible for breaking up a page or for providing links from one of these subpages to the next.

20

Behind the *Options* button there should be navigation links, which allow a User to go back up to various levels within the structure of the site, such as *Home* and *Section Home* (these can be extended to use more levels).

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For instance a site may have a Home page with links to many sections. One of these sections may be *News*, which has links to more relevant sections such as *Irish News*, *World News* etc. If we are in an article that relates to Irish news then behind the

5 *Options* button, there could be links to the Irish News section, the main News section and the overall Home page. Therefore navigation around the site is limited to a max of 1 + (No of Levels within the site). Any menu specified by the menu structure that should appear behind the *Options* button must then be appended to the above navigation links.

10

Meta tags

Navigation Links should be defined in meta tags as follows.

15 <meta name="Home" content="../default.htm" scheme="mmsection" />
 <meta name="Business Home" content="default.htm" scheme="mmsection" />

The scheme attribute defines that this meta tag is TML specific, stating that the tag is providing a link to a particular point in the website's structure. In the above example

20 the links *Home* and *Business Home* will be seen behind the *Options* button on the Wap device. To provide this feature dynamically in a server side script implies that the site must be well structured and thought out.

Tables

25

Tables are problematic to deal with. The following five approaches can be taken:

Row	If the table is defined as row major then each
major/Flat/Linked	row is broken up into groups with next links

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between each group.

Row major/Flat	If the table is defined as row major then each row is displayed in sequential order within a single group
Row major/Hierarchical	If the table is defined as row major then each row is broken up into groups and a menu is extracted from these.
Column major/Flat/Linked	If the table is defined as column major then each column is broken up into groups with next links between each group.
Column major/Flat	If the table is defined as column major then each column is displayed in sequential order within a single group
Column major/Hierarchical	If the table is defined as column major then each column is broken up into groups and a menu is extracted from these.

For each of these it is necessary to mark the rows/columns that represent the head and the body.

5 `<mm-table-model major="column" headlocation="1" bodylocation="2 3">`

The mm-table tag wraps a table tag and its attributes are defined as follows:

major	Either "row" or "column" major
headlocation	Specifies the row/column to be used as the

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head in the group. A single number. For example, if row (or column) one contains the element to process as a mm-head then the headlocation attribute is "1". In the above example row1 contains the head.

bodylocation

Specifies the rows/columns to be used as the bodies in the group. A single number or a space separated list of numbers. For example, if rows (or columns) two and four contain the element to process as a mm-body then the bodylocation attribute is "2 4". In the above example row2 and row3 contain the body.

tabletype

Either "group_view", "single_view" or "normal_view".

This defines whether each column/row will be broken up into separate groups or into just one group. "Normal" is for just one group.

Inclusions/Exclusions

Includes, specified by the tag mm-include, allow the Author to wrap content that
 5 needs to be included for output for a particular user agent or device. By default everything within a group is displayed, however with the include mm-include tag, the Author can write device specific content if necessary.

Excludes, specified by the mm-exclude tag, allow the Author to wrap content that
 10 needs to be excluded from output for a particular user agent or device. By default everything within a group is displayed, however with the mm-exclude tag, certain parts of this content can be excluded for particular devices. For instance a lengthy

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article, is appropriate for a PC browser, whereas on a WAP device it might be more appropriate to exclude a large part of the article.

Syntax

5

```
<mm-include useragents="wml1.1 palm">  
<mm-exclude useragents="wml1.1">
```

The include and exclude tags have the one attribute:

10

useragents	A single name or a space separated list of names
------------	--

Example:

15

```
<mm-include useragents="wml1.1">  
    <img src= "/images/logo.wbmp">  
</mm-include>
```

The image logo.wbmp will appear just on WAP devices supporting wml1.1.

20 Logos

A logo is seen as special image, to catch the eye of the consumer. Logos appear on most web pages, however on smaller devices, such as WAP, they tend to be treated differently. In this case the logo very often is the first thing the user sees when they go to that site, and after a 5 second time interval the logo disappears and is replaced with a main home page. The logo thereafter is not seen again. To cater for this the mm-logo tag is used.

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Syntax

```
<mm-logo id="MobileAwareLogo">
```

5 Everypage

It might be necessary to display some content on every page, for example a copyright might appear at the bottom of every page that displays a particular article. Therefore the mm-everypage tag is used to wrap content that should appear on everypage of the
10 output for particular user-agents or devices.

Syntax

```
<mm-everypage useragents="wml1.1">
```

15

Page Breaks

The tag mm-pagebreak is included to allow the user to insert their own pagebreaks. The content assembly module will break up pages that are too big for a particular
20 device. However where these breaks occur may not be optimal, and so the author can control where these page breaks occur.

The invention is not limited to the embodiments described but may be varied in construction and detail.

25

mm-content

The tag mm-content

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A tag mm-content has been designed to allow authors to specify what external source they want inserted and where in the TML document it should be integrated.

Its attributes are defined as follows:

5

Lang**#REQUIRED**

The "lang" attribute is compulsory and specifies the format of document referenced by the HREF attribute. The CA-engine will use the default transcoder for this format unless the TRANSCODER attribute has specified otherwise.

Transcoder**#IMPLIED**

The transcoder attribute is optional. It allows the author to override the default Everix setting for what transcoder that are to be used for a specific format.

Href

URL to the document that should be included

Example:

The following example shows how a News Industry text Format (NITF) document is included with an mm-content element.

10

Integration of externally residing NITF into a TML document

```
<mm-content lang="NITF"
```

```
"href=http://www.news.com/sport?stories="topten"/>
```

15

mm-if

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A conditional tag <mm-if> whose attributes describe a decision process to determine if the enclosing content should or should not be included in the final document. The decision process operates on the state information available at the time of transcoding, and relates to information associated with the client, the service being
5 delivered to the client, and other properties of the delivery mechanism.

The attributes are:

op	A comparison operator. Values are: eq, ne, gt, lt, ge and le. The four "order" operators treat numeric strings as integers.
state	A name of a state variable associated with the client, service or delivery platform.
value	A value against which the named state variable will be compared using the operator.

Example:

10 <mm-if state="colour" op="eq" value="yes"></mm-if>

The tag is only included in the output if the state variable "colour" has the value "yes".

15 The invention is not limited to the embodiments described but may be varied in construction and detail.

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Claims

1. A communication processing method carried out by a network operator platform for facilitating communication between servers and user devices, the
5 method comprising the steps of:

identifying a group structure in either well formed HTML or XHTML content of received information from a server,

10 applying a task structure outline to the content, and

transmitting information to a recipient user device according to parameters associated with the structure and the user device.
- 15 2. A method as claimed in 1, wherein the content is transformed to a device-specific format based on knowledge of the given device type, for example, device specific formats include HTML (for PCs, laptops, PDAs, and pocket PCs), WML (for smart phones, PDAs and Palms), cHTML. (for i-mode), HDML and voiceXML.
- 20 3. A method as claimed in claims 1 or 2, wherein the group structure comprises a group associated with each of a plurality of content sections.
4. A method as claimed in claim 3, wherein at least some groups comprise sub-
25 groups in a hierarchy arrangement.
5. A method as claimed in claim 4, wherein the platform applies to received content a structure outline associated with a user device type, said structure outline comprising attributes setting out how groups are to be transmitted to
30 the user device and outputted by the user device.

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6. A method as claimed in claim 5, wherein each group comprises a head and a body and the structure outline attributes allow different transmission or output conditions for the head and body of each group.
- 5 7. A method as claimed in any preceding claim, wherein the platform operates according to instructions encoded in a task mark-up language compliant with XML.
- 10 8. A method as claimed in any preceding claim, wherein the platform processes received content either automatically or in response to manually-inputted instructions, in which automatic processing is allowed by application of a mark-up language mapping at an initialisation stage.
- 15 9. A method as claimed in any preceding claim, wherein the platform processes received content according to personalisation attributes chosen by a user.
10. A method as claimed in claim 8, wherein the platform chooses a structure outline according to both a user device type and also user-chosen personalisation attributes.
- 20 11. A method as claimed in any preceding claim, wherein a plurality of menu structures are applied to different pages on a site.
- 25 12. A method as claimed in claim 11, wherein the menu structure is held in a separate document and *included* (server side include) in the document.
13. A network operator platform comprising means for performing a communication method as claimed in any preceding claim.

30

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14. A computer program product comprising software code for performing the method of any of claims 1 to 12 when executing on a digital computer.

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ABSTRACT

“Information Communication”

- 5 A network operator platform uses a task markup language (TML) to interface between a server and a variety of user devices of different types. HTML or XHTML content of server-side information is processed to identify group structure, a structure outline is applied to the content, and information is transmitted to user devices according to parameters associated with the structure and with the user devices. The
- 10 group structure has groups in a hierarchy, each group having a head and body.

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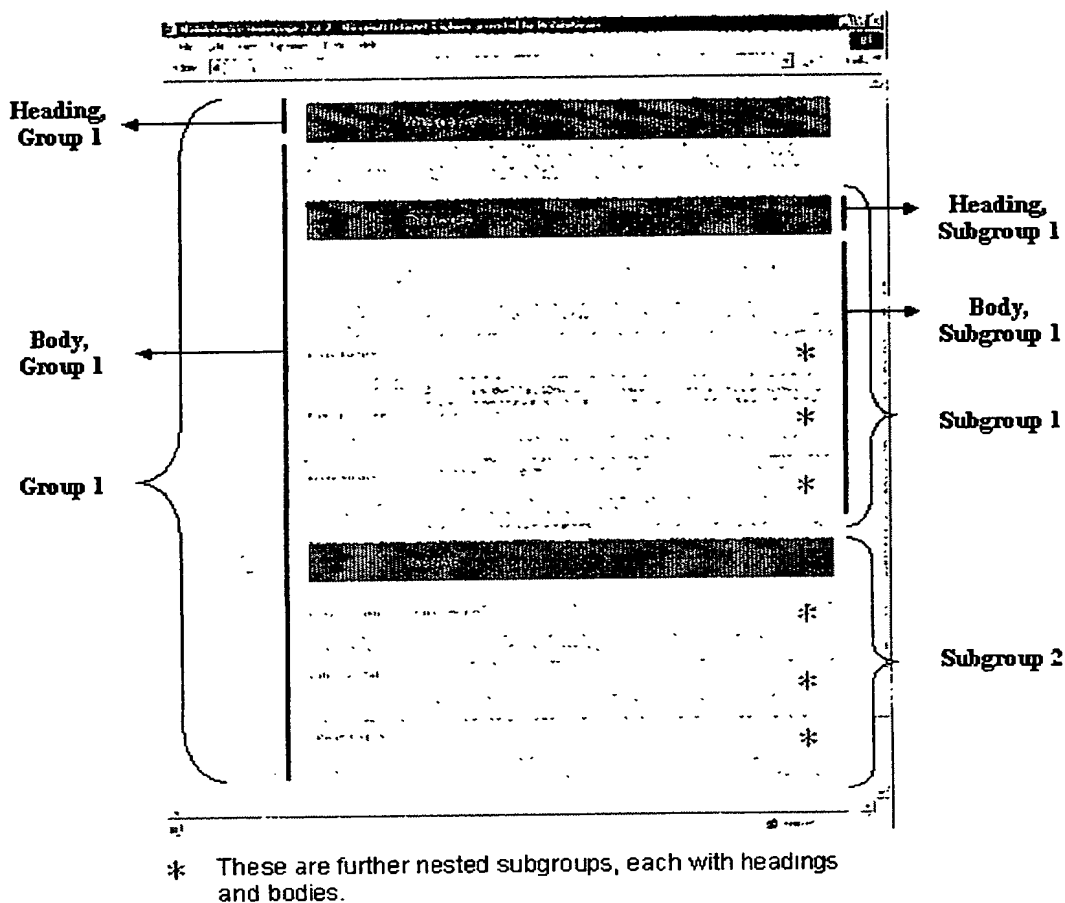


Fig. 1

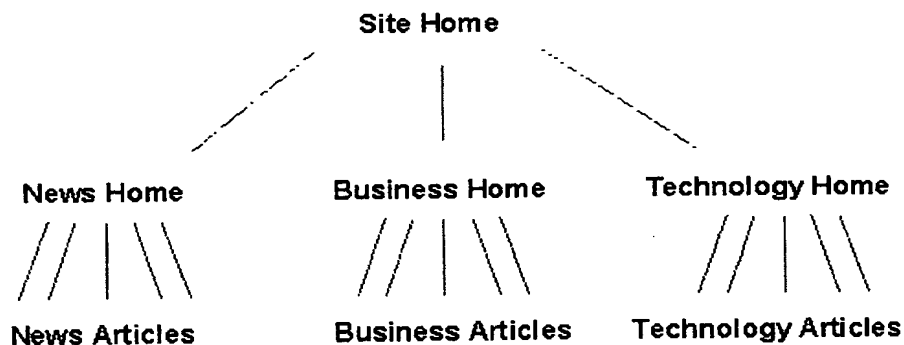


Fig. 2

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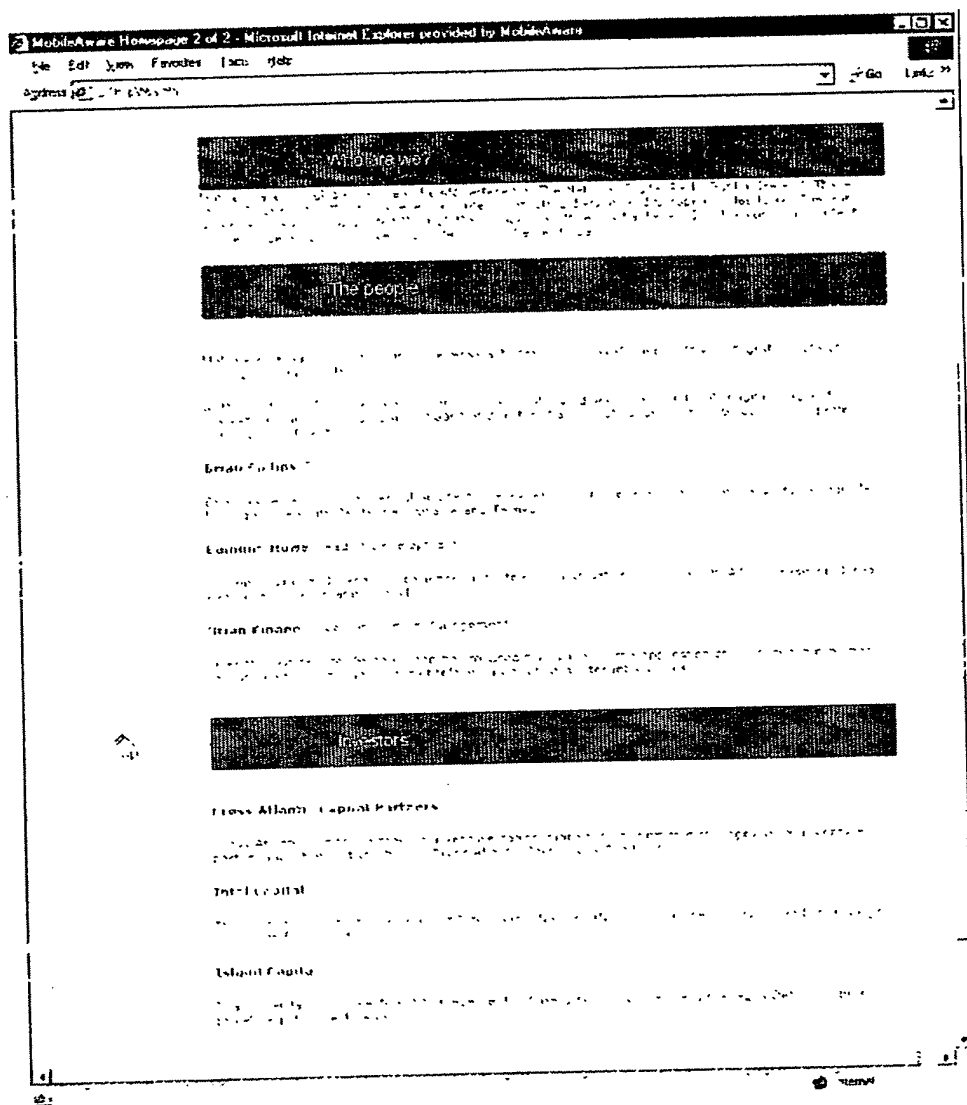


Fig. 3